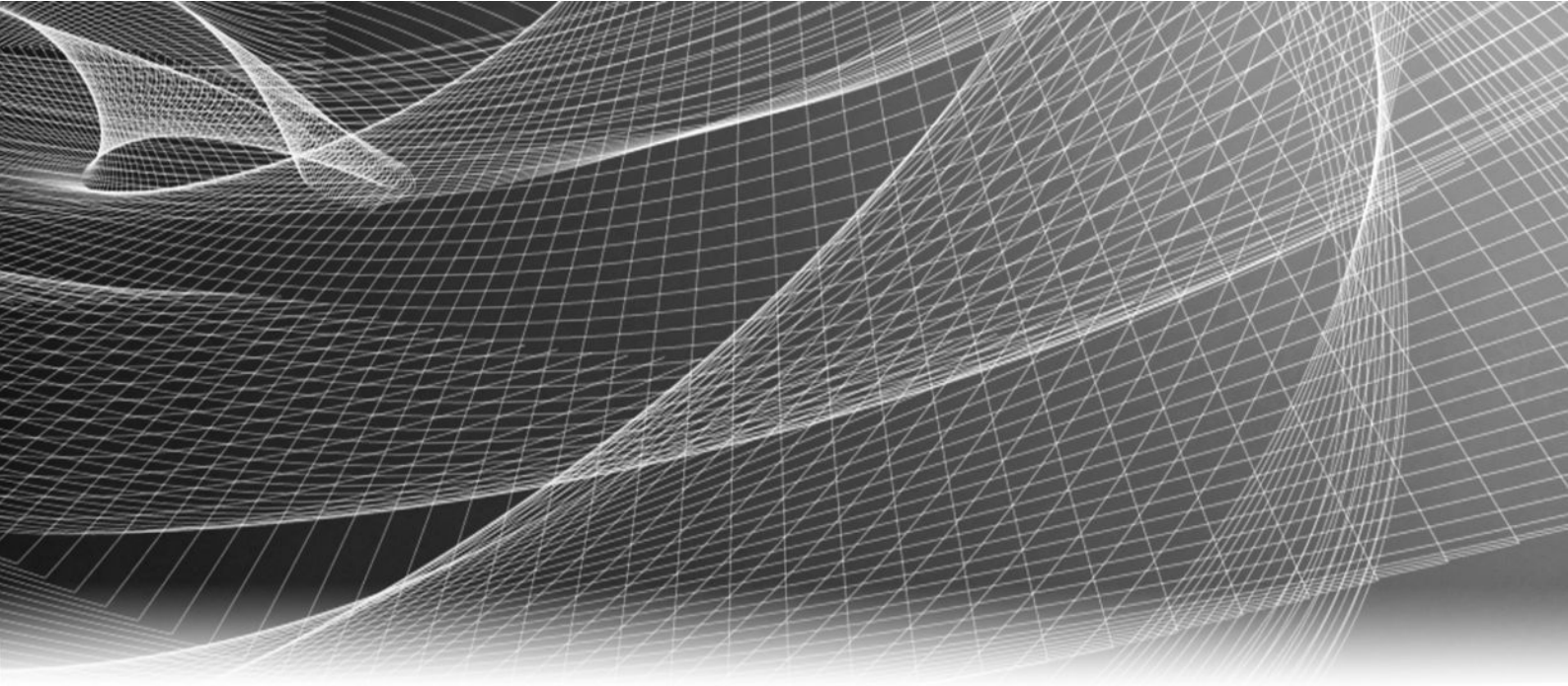

EMC® ViPR® Controller

Version 2.3

Create a VM and Provision and RDM with ViPR Controller and VMware vRealize™ Automation™

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EMC²

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CONTENTS

CHAPTER 1

Integrate EMC ViPR with VMware vRealize Automation Center

Create a VM and provision an RDM with EMC ViPR Controller and vRA

EMC has made it easy to integrate ViPR Controller by providing an orchestration interface to the ViPR Controller platform.

The EMC ViPR Controller plug-in for VMware vRealize Orchestrator is a collection of workflows that communicate with ViPR Controller to carry out common operations for software defined storage. The common operations include provisioning, expanding, or removing file and block storage.

vRealize Automation (vRA) can consume workflows directly from vRealize Orchestrator. Therefore, the EMC ViPR Controller plug-in for VMware vRealize Orchestrator is a required integration component. Using this component means that integration from vRealize Automation to ViPR Controller can be done without any knowledge of the ViPR Controller API.

Note

Prior to the VMware vRealize Automation version 6.2.1 release, this product was named VMware vCloud Automation Center.

The Example Scenario

vRealize Automation (vRA) is a compute-centric product. ViPR Controller is a software defined storage product.

For our example, a use case was chosen that combines both products into one simple example. You can use this example to branch out to develop scenarios that are specific to your business.

Use case

A user would like to provision a virtual machine for a database and allocate dedicated storage for the database. A vRA blueprint is created that defines the virtual machine and storage from ViPR Controller to be used for the database. The storage provisioned from ViPR Controller will be mapped to the virtual machine using Raw Device Mapping in vCenter Server.

System Prerequisites

The following components must be installed and able to communicate on the network.

For supported version, see the *ViPR Controller Support Matrix*, which is available from the ViPR Controller Product Documentation Index .

vRealize Automation System Prerequisites

This document assumes that the following baseline configuration, which is required for any integration with vRealize Automation (vRA), was configured prior to installing and running the ViPR Controller example.

vRealize Automation server requirements

- All the vRA related hosts are able to communicate each other.
- vRA and vRealize Orchestrator should be able to communicate each other.
- A vCenter Server Agent must be installed and running on the vRA server.

vRealize Orchestrator server requirements

- The vCenter Server Plug-in for vRealize Orchestrator must be installed and running.
- ViPR Controller should be configured in vRealize Orchestrator.
- Should be able to execute "Provision RDM with ViPR Controller Storage" workflow successfully.

vCenter Server requirements

- A couple of ESXi hosts must be provisioned and must exist within a cluster in the vCenter environment. This cluster will be where the virtual machines will be deployed by vRA.

EMC ViPR System Prerequisites

ViPR Controller must be installed and configured for the storage array that will be used. ViPR Controller must be configured to the point where it is ready to provision storage.

Preparing the system to run the example

To ensure success, follow this high level process for preparing the vRealize Automation (vRA) environment to successfully run the ViPR Controller example.

Procedure

1. Setup vRA.
2. Create the Baseline Blueprint.

   Checkpoint 1 - Create a virtual machine.
3. Configure vRealize Orchestrator.

   Checkpoint 2 - Test the ViPR Controller plugin.
4. Install ViPR Controller.
5. Configure vRA to run the example.

Configure vRA appliance to vRealize Orchestrator (vRO) server

From the vRA console, configure vRA to the vRO server.

Procedure

1. Log into the vRA appliance using SSO credentials.
2. Navigate to **Administration** › **Orchestration Configuration**.
3. Select **Server Configuration**.

   The **Server configuration** wizard displays.
4. Select **Use an external Orchestrator server** and then provide all vRO related details which has EMC ViPR Controller plug-in for VMware vRealize Orchestrator.
5. Click **Test Connection** to validate the connection to vRO.
6. Click **Update**.

   vRA is configured to the vRO server.

Assign the Service Architect role to AD user

From the vRA console, assign the service architect role to the AD user.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Administration** › **Users & Groups** and then click **Custom Groups**.
3. Add the group and provide the **Custom Group** name and description.
4. Select the *Service Architect* role and click **Next**.
5. Add the AD user in the **Members** tab and click **Add**.

   The **Administration** tab displays in the vRA console.

Add the vRA license

From the vRA console, add the vRA license.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Administration** and then click **Licensing**.
3. Click **Add License**.

   The **Add License** wizard displays.
4. Type the vRA license key and then click **OK**.

   The license key is listed with the license information.
5. Logout and then login again to ensure the license changes are effective.

Create endpoints and its credentials

From the vRA console, create endpoints and add the vCenter credentials.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Endpoints** and then click **Credentials**.
3. Click **New credentials**. Type the vCenter server credentials and then save.

   The vCenter server credentials are listed under **Credentials**.
4. Click **Endpoints**. Type the vCenter server details and then save.

   The vCenter server is listed under **Endpoints** and its compute resources are discovered.
5. Click **New credentials**. Type the vRealize Orchestrator Client credentials and then save.

   The vRealize Orchestrator credentials are listed under **Credentials**.
6. Click **Endpoints**. Type the vRealize Orchestrator details and then save.

   The vRealize Orchestrator is listed under **Endpoints**.

Create Fabric Group and Business Group

From the vRA console, create Fabric Groups and Business Groups.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Groups** and then click **Fabric Groups**.
3. Click **New Fabric Group**.
4. Provide the required details and then click **OK**.

   The new fabric group displays in the Fabric Groups list.
5. Logout and then login again to ensure the fabric group changes are effective.
6. Navigate to **Infrastructure** › **Groups** and then click **Business Groups**.
7. Click **New Business Group**.
8. Provide the required details and then click **OK.**

   The new business group displays in the Business Groups list.

Create machine prefixes

From the vRA console, create machine prefixes.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Blueprints** and then click **Machine Prefixes**.
3. Click **New Machine Prefix**.
4. Provide the required details and then click **OK**.

   The new machine prefix displays in the Machine Prefixes list.

Create Reservation and Blueprint

From the vRA console, create a reservation and blueprint.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Reservations** and then click **New Reservation**.
3. Select **Virtual** › **vSphere (vCenter)**.
4. Provide the required details and then click **OK**.

   The new reservation displays in Reservations list.
5. Navigate to **Infrastructure** › **Blueprints** and then click **New Blueprint**.
6. Select **Virtual** › **vSphere (vCenter)**.
7. In **Blueprint information**, provide the following details.
   a. Type the name **`Create Virtual Machine`**
   b. Click **Master (copyable)**.
   c. Select the data for other mandatory fields.
8. In **Build Information**, provide the following details.

a. Select the Action as **Create**.

b. Select the Provisioning workflow as **BasicVMWorkflow**.

c. Provide the Machine Resource details.

9. In **Properties**, provide the following details.

a. Click **New Property**.

b. Type the name **`VMware.VirtualCenter.OperatingSystem`**

c. Type the value **`sles10_64Guest`**

d. Save these details.

10. Click **OK**.

The blueprint displays under **Blueprints**.

11. Publish the Blueprint by choosing publish option.

Create virtual machine

From the vRA console, create a virtual machine.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Administration** › **Catalog Management** and then click **Services**.
3. Click the add (+) icon to add Service.
4. Type the name **`Create Virtual Machine`** (can be user defined) and then select the status as **Active**.
5. Click **Add**.

The new service displays in the Services list.

6. Select the service and then click **Manage Catalog Items**.
7. Click the add (+) icon. The catalog items should be automatically populated and then select **Create Virtual Machine**.
8. Click **OK**.

The service displays under **Catalog Items**.

9. Click **Close**.
10. Navigate to **Administration** › **Catalog Management** and then click **Entitlements**.
11. Click the add (+) icon to add Entitlement.
12. Provide the following details.

a. Type the Name **`EMC vSphere Admins`**

b. Select the User as **Registered AD** users.

c. Select the status **Active**.

d. Click **Next**.

13. In **Item & Approvals**, provide the following details.

a. Click the add (+) icon to add Entitled Services.

b. Click **Create Virtual Machine**.

c. Click **OK**.

The service displays in the Entitled Services list.

14. Click the add (+) icon to add Entitled Catalog Items and then click **Create Virtual Machine**. Click **OK**.

    The item displays in the Entitled Catalog Items list.

15. Click the add (+) icon to add Entitled Actions and then add the appropriate actions.
16. Click **OK**.

    The action displays in the Entitled Actions list.

17. Navigate to **Catalog** and then select the **Create Virtual Machine** service.
18. Click **Request**.
19. Provide all the required details in the wizard and then submit the request.

    The Successful submission message displays.

20. Navigate to **Requests** to check the status of your request.

    The request status is Successful.

21. Log into vCenter server through vSphere client and validate that the Virtual Machine is created.

Create property dictionary

From the vRA console, configure vRA to the vRO server.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Blueprints** and then click **Property Dictionary**.
3. Click **New Property Definition** and then type the following details for the ViPR Controller Virtual Array.

Column	Value
Name	EMC.ViPR.VirtualArray
Display Name	EMC ViPR VirtualArray
Control Type	DropDownList
Required	Yes
Property Attributes	‹*Comma separated ViPR Virtual Array list*›

4. Click **New Property Definition** and then type the following details for the ViPR Controller Virtual Pool.

Column	Value
Name	EMC.ViPR.VirtualPool
Display Name	EMC ViPR Virtual Pool
Control Type	DropDownList
Required	Yes
Property Attributes	‹*Comma separated ViPR Virtual Pool list*›

Create an EMC ViPR Controller build profile

From the vRA console, create a build profile.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Blueprints** and then select **Build Profiles**.
3. Click **New Build Profile**.
4. Type the name **`EMC ViPR Provisioning`**.
5. Under Custom properties, click **New Property** and then type the following details.

Table 1 Properties

Name	Value	Encrypted	Prompt User
EMC.ViPR.Compatibility.Mode	Virtual	No	No
EMC.ViPR.VirtualArray	‹*virtual array name*›	No	Yes
EMC.ViPR.VirtualPool	‹*virtual pool name*›	No	Yes
EMC.ViPR.VolumeNamePrefix	‹*user defined volume name*›	No	Yes
EMC.ViPR.VolumeSizeGB	‹*volume size*›	No	Yes

Create blueprint for EMC ViPR Controller provisioning

From the vRA console, create a blueprint for EMC ViPR Controller provisioning.

Procedure

1. Log into the vRA appliance using the AD user.
2. Navigate to **Infrastructure** › **Reservations** and then click **Reservations**.
3. Click **New Reservation** and then select **Virtual** › **vSphere (vCenter)**.
4. Provide the required details and then click **OK**.

   The reservation displays in the **Reservations** list.
5. Navigate to **Infrastructure** › **Blueprints** and then click **New Blueprint**.
6. Select **Virtual** › **vSphere (vCenter)**.
7. Select **Create Virtual Machine** from **Copy from existing blueprint** dropdown list.
8. Type the name **`EMC ViPR Example`** and then click **Properties**.
9. Navigate to **Build profiles** and then click **EMC ViPR Provisioning**.
10. Under **Custom properties**, click **New Property** and then type the vCO endpoint name and virtual center operating system.

Table 2 Properties

Name	Value	Encrypted	Prompt User
VMware.VCenterOrchestrator.EndpointName	‹*vCO Host Name*›	No	No
VMware.VirtualCenter.OperatingSystem	sles10_64Guest	No	No

11. Click **OK**.

    The blueprint information displays under **Blueprints**.

12. Publish the Blueprint by choosing publish option.

Install and configure vRA in vRO

Install the vRA plugin and then configure vRA in vRO.

Procedure

1. Download the vRA o11nplugin-vra.dar plugin from the vRA appliance in `/usr/lib/vro/app-server/plugins`.
2. Install the vRA Plugin for in vRO through vRO Configuration page.
3. Restart all of the vRO related services once the vRA plugin is successfully installed.
4. Log into the vRO Client and then verify the vRA folder is available under **Workflows** section.
5. Navigate to the **vRealize Automation** › **Configuration** folder and then run the **Add a vRA host** workflow.
6. Type all of the vRA related details and then submit the workflow.
7. Once the workflow is successfully executed, verify the vRA details are displayed properly under **Inventory**.

Configure vRA custom workflow for EMC ViPR Controller

From the vRO user interface, configure the vRA custom workflow for EMC ViPR Controller.

Procedure

1. Log into the vRO Client using admin privileges.
2. Select EMC ViPR Controller folder under workflow tab and then click **Import Workflow**.
3. Select **vRA Custom Workflow for ViPR** from the EMC ViPR Controller Enablement Kit folder.

   The workflow is imported into vRO.

4. Navigate to the **vRealize Automation** › **Extensibility** › **Installation** folder and then start the **Install vRO customization** workflow.
5. Type the vRA Host (vRA IAAS Server Hostname) and then click **Next**.
6. Keep the default values in **State Change Workflow** and then click **Next**.
7. Specify the value as **5.0** for Number of menu operations and their workflows field and then click **Submit**. It may take some time to execute this workflow. Ensure that this workflow executes successfully.
8. Navigate to **vRealize Automation** › **Extensibility** and then start the **Assign a state change workflow to a blueprint and its virtual machines** workflow.

9. Select **MachineProvisioned** and then type the vRA host name.
10. Select the Blueprints name as **EMC ViPR Example** from the list. Leave the remaining fields to the default values.
11. Select **vRA Custom Workflow for ViPR** for the End user workflow to run field. Leave the remaining fields to default values.
12. Click **Submit** and then verify that the workflow successfully executed.
13. Log into the vRA appliance using the AD user.
14. Navigate to **Infrastructure** › **Blueprints** and then select **Blueprints**.
15. Select **EMC ViPR Example** and then verify that the **ExternalWFStubs.MachineProvisioned** property exists under Properties.
16. Click **OK**.

EMC ViPR example: Create a VM and provision an RDM with EMC ViPR storage

From the vRealize Automation user interface, create a VM and provision an RDM with EMC ViPR storage.

Procedure

1. Log into the vRealize Automation appliance using the AD user.
2. Navigate to **Administration** › **Catalog Management** and then click **Services**.
3. Click the add (+) icon to add Service.
4. Type the name **`EMC ViPR Example`** (can be user defined) and then select the status as Active.
5. Click **Add**.

   The service displays in the Services list.
6. Select the service and then click **Manage Catalog Items**.
7. Click the add (+) icon. The Catalog Items should be automatically populated and then select **EMC ViPR Example**.
8. Click **OK** to add the populated service.

   The item displays under **Catalog Items**.
9. Click **Close**.
10. Navigate to **Administration** › **Catalog Management** and then click **Entitlements**.
11. Click the add (+) icon to add an entitlement.
12. Perform the following steps.
    a. Type the name **`EMC vSphere Admins`**
    b. Type the users **`Registered AD users`**
    c. Type the status **`Active`**
    d. Click **Next**.
13. Under Item & Approvals, click the add (+) icon to add Entitled Services. Click **EMC ViPR Example** and then click **OK**.

    The services displays in the Entitled Services list.

14. Click the add (+) icon to add Entitled Catalog Items. Click **EMC ViPR Example** and click **OK**.

    The item displays in the Entitled Catalog Items list.

15. Click the add (+) icon to add Entitled Actions and then add the appropriate actions.
16. Click **OK**.

    The action displays in the Entitled Actions list.

17. Navigate to **Catalog** and then select **EMC ViPR Example** › **Request**.
18. Type all of the required details in the wizard and then submit the request.

    The Successful submission message displays.

19. Navigate to **Requests** to check the status of your request.

    The request status is Successful.

20. Log into the vCenter Server through the vSphere client and then validate if the Virtual Machine is created and provisioned with raw device mapping (RDM) of EMC ViPR Storage.
21. Validate the EMC ViPR volume information in the ViPR Controller GUI or CLI.